Living with a Climate in Transition: Pacific Islands RISA Experience

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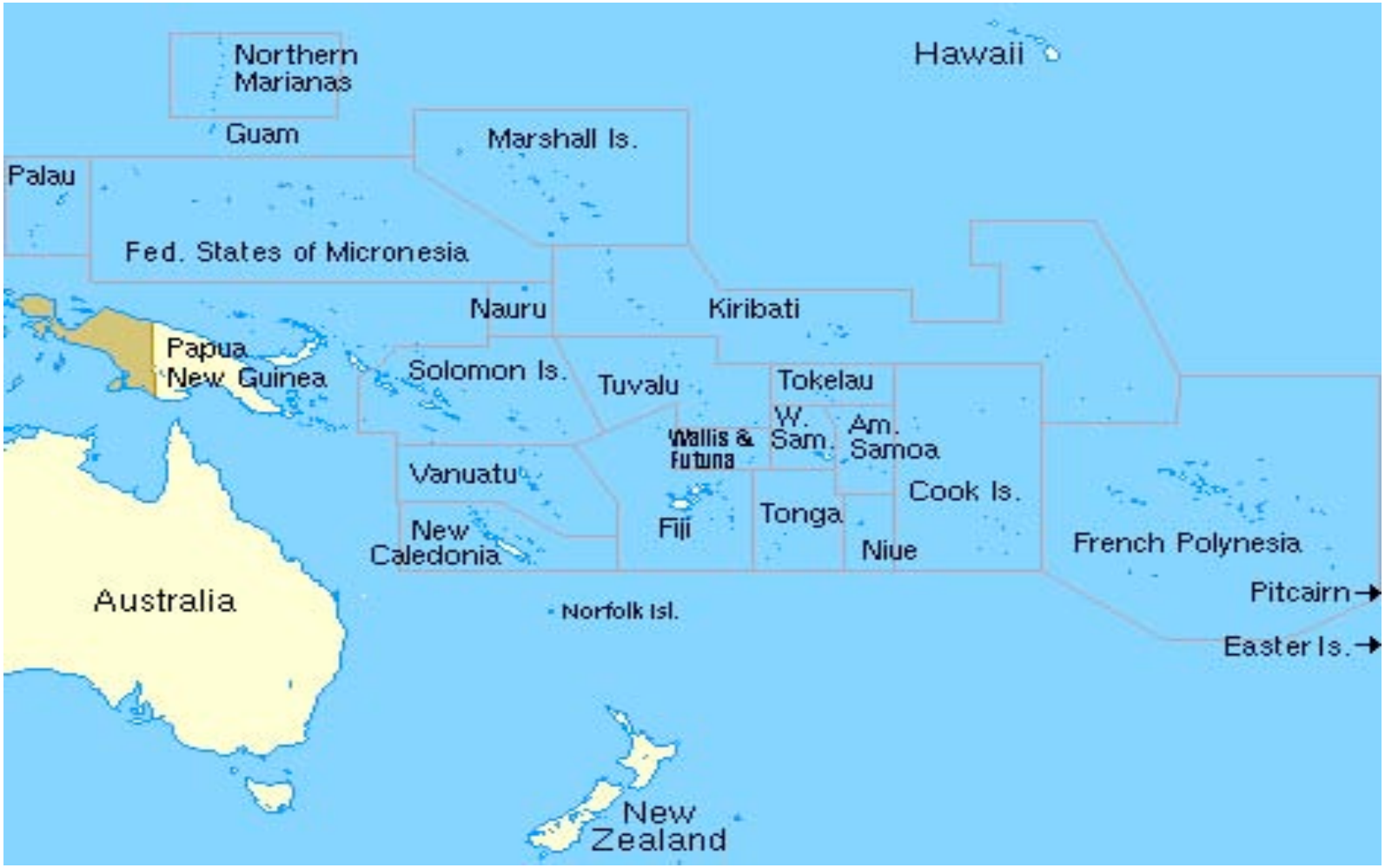
Climate Counts in the Pacific

- Year-to-year variability (esp. ENSO) has significant consequences
  - Climate-related ***extreme events*** (droughts, floods, tropical cyclones) present significant challenges to public safety and community infrastructure
- Islands and low-lying coastal communities among the most vulnerable to climate change
- Economic plans dependent on climate-sensitive sectors or resources
- Unique ecosystems and rich biodiversity
- Water resources already stressed in some areas

The Pacific RISA Region



Consequences of Climate Variability & Change in the Pacific: Some Key Issues

- Providing Access to Fresh Water
- Protecting Public Health
- Ensuring Public Safety & Protecting Community Infrastructure(extreme events)
- Sustaining Tourism
- Sustaining Agriculture
- Promoting Wise Use of Coastal & Marine Resources

Pacific Islands Regional Assessment

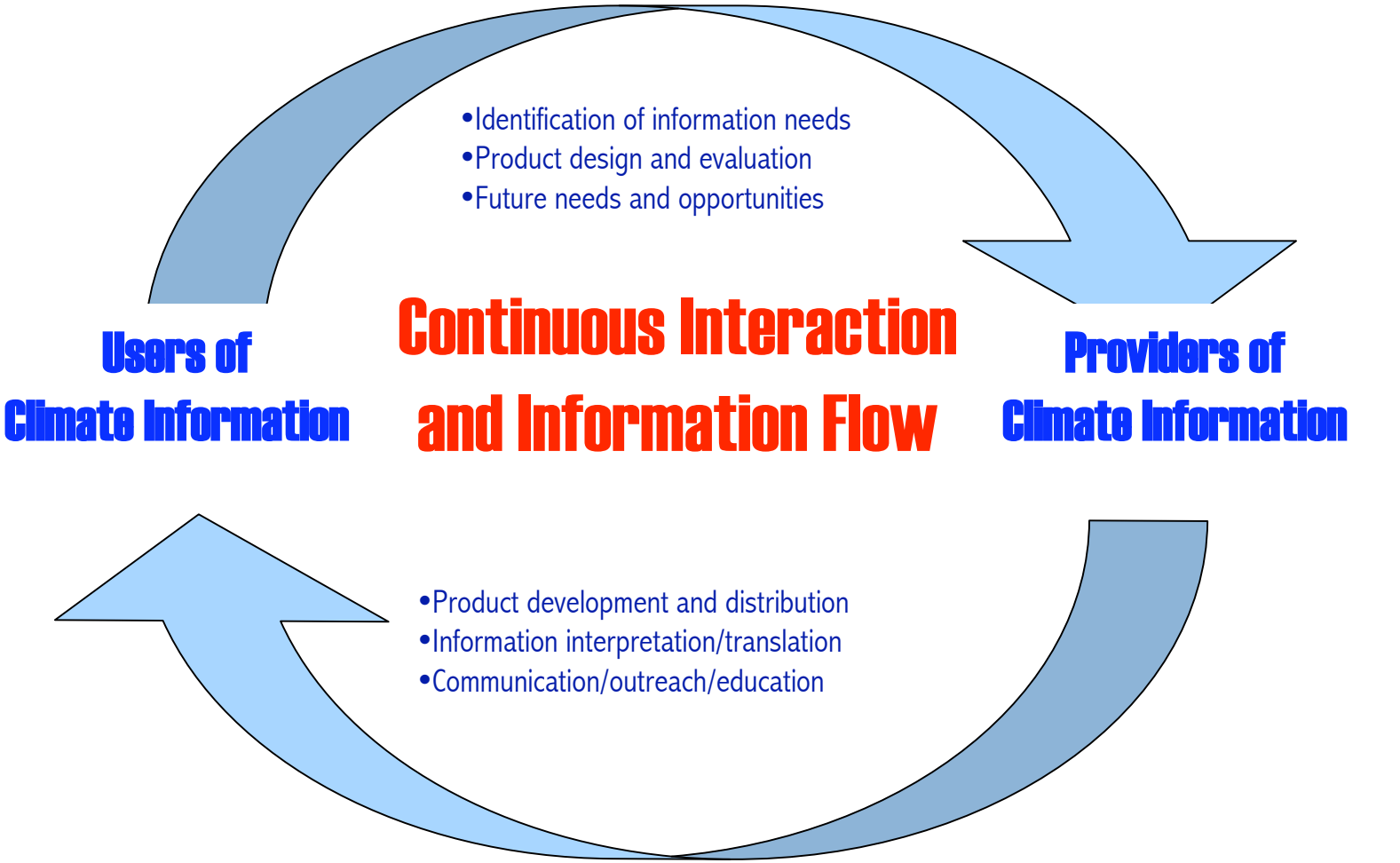
Focus on **Vulnerability** in order to:

- Understand **exposure & sensitivity (impacts)**
- ***Address adaptive capacity (resilience)***
- Develop **appropriate response options**
- Engage all experts in **shared learning and joint problem-solving**

Pacific Islands Assessment: Overarching Recommendation

"an ongoing commitment to the emergence of a Pacific climate information system that supports the development and use of climate information to support decision-making"

Conceptual Model of a Pacific Climate Information Service




IRA 732

Pacific RISA: Early Foundations

- Pacific ENSO Applications Center (PEAC)
- Pacific Assessment of the Consequences of Climate Variability and Change
- NOAA/OGP-supported research on climate and health (EWC and UH)
- APN/NOAA-supported Training Institute on Climate & Society in the Asia-Pacific
- 2003 Bangkok Symposium on Climate & Extreme Events in Asia-Pacific
- Climate and disaster management work at various institutions

Pacific RISA

- Emphasis on **reducing vulnerability to climate-related extreme events** (droughts, floods, tropical cyclones)

- **Support and enhance climate risk management activities** of Pacific Island governments, communities, resource managers and businesses

Pacific RISA Objectives

- Sustain & expand ***focused, interactive dialogue with users*** in climate-sensitive sectors
- Enhance regional efforts to ***develop and apply climate forecasts*** and information products
- Develop ***enhanced data and information products*** that address the nature and consequences of climate-related extreme events
- Adapt and apply ***model-based decision support tools***

Pacific RISA Program Elements (Fall 2003 to Fall 2006)

- **Review of the first ten years of PEAC**
- Pacific climate assessment education and outreach
- **Pacific Islands Training Institute on Climate and Extreme Events**
- Modeling support through the NCAR Weather and Climate Extremes initiative.
- **Integration of climate considerations into a model-based, Digital Comprehensive Planning (DCP) tool for county planners in Hawaii**

Digital Comprehensive Planning Model (DCP) – Prescott College

- DCP prototype used in initial Pacific Islands Climate Assessment
- Developed initially for use by county land use planning officials in the Southwest; modified for us in fire fuel hazards assessment
- Modified for use in Hawaii through separate contracts with county officials in Maui and other islands (ongoing Prescott College work)

Digital Comprehensive Planning Model (DCP) – Prescott College

- Confirmation of model usefulness in island settings
- Software development to support integration of information on climate variability and climate change with particular attention to implications for water resource management and disaster management planning
- Interaction and dialogue with users (county planners) to support software development/evaluation and clarify climate information needs – per Prescott College Team –***this process of shared learning constitutes about two-thirds of the job!***

Pacific Islands Training Institute on Climate and Extreme Events: Goal

Enhance the regional network of scientists, forecasters, disaster management officials and resource managers skilled in the development and use of climate information **to increase the resilience of Pacific Island nations in the face of climate-related extreme events**

Learning Objectives

- Increased understanding of consequences of climate variability and change
- *Increased awareness of and familiarity with* climate forecasting and assessment tools and information services
- Enhanced understanding of current and potential applications of those tools to reduce vulnerability & make critical decisions in key sectors
- Exploration of the challenges & opportunities of mainstreaming climate information to support economic development and community planning in the Pacific


THE
SPIRIT OF NATURE
SPEAKS!

Pacific ENSO Applications Center (PEAC)

Pacific ENSO Workshop October1992

- Climate forecasters, modelers, scientists and AAPI decision-makers:
  - Disaster Managers
  - Water System Managers
  - Agriculture Extension
  - Coastal Zone Management
  - Fisheries

Pacific ENSO Applications Center

- Pilot project begun 1994 (University of Hawaii, University of Guam, NOAA (OGP and NWS), and Pacific Basin Development Council)
- Early focus on:
  - Improving historical data bases (e.g. rainfall atlas)
  - Learning and fine-tuning ENSO-weather relationships
  - Expanding access to & interpreting new forecast products
  - Expanding public awareness and understanding
  - Identifying applications opportunities & assessing consequences

PEAC Operational Transition

- Transition from research to operational status began in FY 2000:
  - Responsibility assigned to NWS Pacific Region
  - Funding through NWS to Pacific Region with continued support for applications research from NOAA/OGP
  - NOAA Corps Officer assigned November 2003
  - Full-time research at UH/SOEST begins December 2003
- Close collaboration among NWS, University of Hawaii and University of Guam continues
- Implementing some changes in PEAC products (e.g., newsletter format & distribution)

ENSO Drought Task Forces

- *Established multi-agency & organizational partners at the local level*
- ***Used PEACESAT satellite for weekly teleconference with PEAC staff***
- *Shared experiences & information: "how to build a family water catchment tank"*

- **Used partnerships to maximize local resources**
- **Kept momentum – "We're all in this together."**

Pacific ENSO Applications Center Regional Workshop: A Look to the Future

- Review first decade of PEAC operations
- Responded to 2003 NOAA/OGP Program Announcement focus on the **forecaster-user link, communications issues and role of institutions**
- Survey, interviews, workshop, synthesis
- "Providing a roadmap for the future of PEAC" (Jim Weyman, June 2004)

PEAC Lessons Learned

- **Early & continuous partnership with users essential:**
  - Shared learning & joint problem-solving
  - Outreach & dialogue programs as priority activities
- **Building trust & credibility a long-term endeavor:**
  - "Eyeball-to-eyeball" contact
  - Accommodating successes and failures

PEAC Lessons Learned

- **Decision-makers interested in information on a continuum of timescales:**
  - Addressing today's problems
  - Planning for the future
- **Forecasts must be set in appropriate context:**
  - Problem to be addressed
  - Historical events, patterns & trends
  - Incorporate traditional/local knowledge
  - Useful and usable information—tailored to needs
  - Appropriate language, timing, tools & technology

PEAC Lessons Learned

- **Number of scientific, technical & institutional constraints remain:**
  - Understanding of local impacts, vulnerability & risk management options still limited
  - Communications – systems & language
  - Varying forecast skill for some seasons, places & parameters
  - Observations and data limitations
  - Political & institutional boundaries – both users and providers

Some Guiding Principles

- Focus on ***integrated climate-society system***
- **Collaborative, participatory process** with users:
  - Continuous, interactive dialogue
  - Co-production of knowledge
  - Document and share experiences
- **Problem-focused approach**:
  - Understand place, context, history and decision making process;
  - Useful & usable information responsive to user needs
  - **Climate information system vs. event forecasting**

Some Guiding Principles

- **Address both process and products:**
  - Integrated program of observations, monitoring, forecasting, assessment, education and applications – **with continuous evaluation and adjustment**
- **Build on existing systems, institutions, programs, relationships & networks:**
  - Recognize the vital role of trusted information brokers
  - Partnerships between science & operations

Some Guiding Principles

- **Facilitate proactive decision making:**
  - Recognize dynamic, evolutionary nature of both climate & policy
- **Climate information and risk management in a sustainable development context:**
  - Responding to today's variability
  - Adaptation to long-term change
  - Economic planning & community development
  - Mainstreaming climate information & adaptation

< Engagement Empowerment >

Individual, Institutional, Community Capacity Building

< Education & Training Equipment (tools & technology) >

Pacific Climate Information System (PaCIS)

- Initial regional discussions at 1999 RMSD meeting in Tahiti
- General agreement on PaCIS vision, goal and objectives from a regional perspective
- Informal discussions among likely partners
- Regional discussions of Regional Climate Centres under WMO
- February 2005 discussions in Honolulu following PEAC review

PaCIS Vision

Resilient and sustainable Pacific communities using climate information to manage risks and support practical decision-making in the context of climate variability and change.

PaCIS Mission

- Clarify climate information needs and guide monitoring, research, forecasting and assessment
- Provide access to critical data, research and new climate information products and services
- Translate research and assessment results into useful and usable climate information

PaCIS Mission

- Interpret global and regional climate forecasts for local operations
- Enhance regional and local skills and capabilities to manage risks and support sustainable development in the context of climate variability and change
- Enhance collaboration among national, regional and international institutions and programs

PaCIS Program Components

- Pacific RISA – Phase II (2007-2012)
- PEAC and related NWS climate services in the Pacific
- University climate, water resources and risk management research programs:
  - UH-SOEST
  - UH-IPRC
  - UH-Social Science Research Institute
  - University of Guam-Water and Environmental Research Institute
- HI State Climatologist
- Pacific regional climate (and ocean) observing systems
- NOAA Integrated Environmental Applications and Information Center (NIEAIC)
- Pacific Risk Management ʻOhana (PRiMO) activities